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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,382	08/20/2003	Abbas Raftari	FMC 1560 PUS2/201-0170	6140

28395 7590 12/09/2005

BROOKS KUSHMAN P.C./FGTL
1000 TOWN CENTER
22ND FLOOR
SOUTHFIELD, MI 48075-1238

EXAMINER

MILLER, PATRICK L

ART UNIT	PAPER NUMBER
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2837

DATE MAILED: 12/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/644,382

Applicant(s)

RAFTARI ET AL.

Examiner

Patrick Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17 and 18 is/are allowed.
- 6) ☒ Claim(s) 1-12, 15 and 16 is/are rejected.
- 7) ☒ Claim(s) 13 and 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01122004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: See bullets below.

Appropriate correction is required.

- Under the heading "Brief Description of Drawings", Figures 1-3 should explicitly state that the respective figures are prior art.

Double Patenting

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

3. Claims 1-8 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-8 and 16 of copending Application No. 10/745,276. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.
 - The claims are substantially identical.

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4. Claim 14 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 13.

When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

- Claim 13 uses the current in the first two phases to estimate current in the third phases.

Claim 14 uses the current in the first and third phases to estimate current in the second phase. These two methods are essentially the same because it would have been obvious to one having ordinary skill in the art at the time of the invention that when you have current in any two phases (of a three phase system), you can calculate the current in the “other” phase.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 9-12, 15, and 16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9-12, 14, and 15 of copending Application No. 10/745,276. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following:

- With respect to claim 9 in the present application and claim 9 of the copending application, the only difference is that claim 9 of the copending application claims $n-1$ current sensors to determine the current for each motor phase, where n is any number of phases greater than one. First, claim 9 of the present application describes a three-phase electric motor and first and second systems that determine current (interpreted as current sensors). Thus, $n = \text{three}$ and the number of current sensors is $3-1 = 2$. Therefore, this limitation is met by the present application. Additionally, it would have been obvious to one having ordinary skill in the art at the time of the invention that if you have all but one phase of current, you can calculate the remaining phase of current.
- With respect to claim 10 of the present application and claim 10 of the copending application, the claims are substantially identical.
- With respect to claim 11 of the present application and claim 11 of the copending application, the claims are substantially identical.
- With respect to claim 12 of the present application and claim 12 of the copending application, the claims are substantially identical.
- With respect to claim 15 of the present application and claim 14 of the copending application, the claims are substantially identical.

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- With respect to claim 16 of the present application and claim 15 of the copending application, the claims are substantially identical.
- This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

6. Claims 17 and 18 are allowed.

- Ishikawa (5,689,170) discloses a comparator comparing estimated values of torque and exciting currents that were output from a torque estimator circuit.
- Sawada et al (2002/0117990) disclose a motor control apparatus that detects a fault in the estimated magnetic position of the motor.
- Kliman et al (5,345,158) disclose two different systems that estimate electromagnetic torque for protecting the motor from overcurrents and undervoltages.
- Sakaguchi et al (5,418,440) disclose a single system where an observer estimates a disturbance torque.
- Kariyazaki (JP-11-184512) discloses estimating torque and comparing it with a previously stored torque parameter.
- Marcinkiewicz et al. (6,756,757) discloses a torque model that is based on rotor position and phase current combinations.
- Goransson et al. (2004/0168844), Lipo et al. (5,272,429), and Scholten (5,998,954) disclose estimating torque using current and position.
- Makino et al. (6,668,202) discloses calculating a torque error based on current and position signals (Fig. 5).

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- Kurishige et al. (6,736,236) discloses two different torque estimates (steering torque and steering shaft reaction torque).
 - Yoshida et al. (6,173,226) discloses first and second torque estimating units that obtain first and second driving shaft torques, respectively, and a comparison means that compares the two estimates.
 - With respect to claims 17 and 18, the Prior Art does not disclose a diagnostic system with two or more different systems that each produces a torque estimate signal, as claimed, and then comparing these signals.
7. Claims 1-12, 15, and 16 would be allowable if not for the double patenting issues.
- With respect to claims 1 and 9, the Prior Art does not disclose a diagnostic system with two or more different systems that each produces a torque estimate signal, as claimed, and then comparing these signals.
8. Claims 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
- First note that the examiner has determined that claims 13 and 14 claim the same subject matter. However, the subject matter claimed would be allowable if one of these claims were rewritten in independent form including all of the limitations of the base claim and any intervening claims.
 - The Prior Art does not disclose a method with the step of determining current in each motor phase with the second system, as defined by claim 9, comprising: generating a second measured current in one of the three phases with a third current sensor; generating

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a second measured current in a second one of the three phases with a fourth current sensor; and generating a second estimated current of current in the remaining phase based on the first and second measured currents.

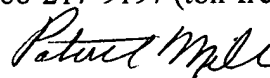
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 41. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

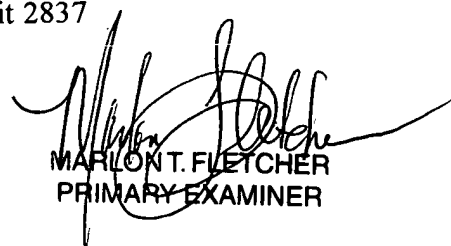
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Patrick Miller
Examiner
Art Unit 2837

pm
October 28, 2005



MARLON T. FLETCHER
PRIMARY EXAMINER